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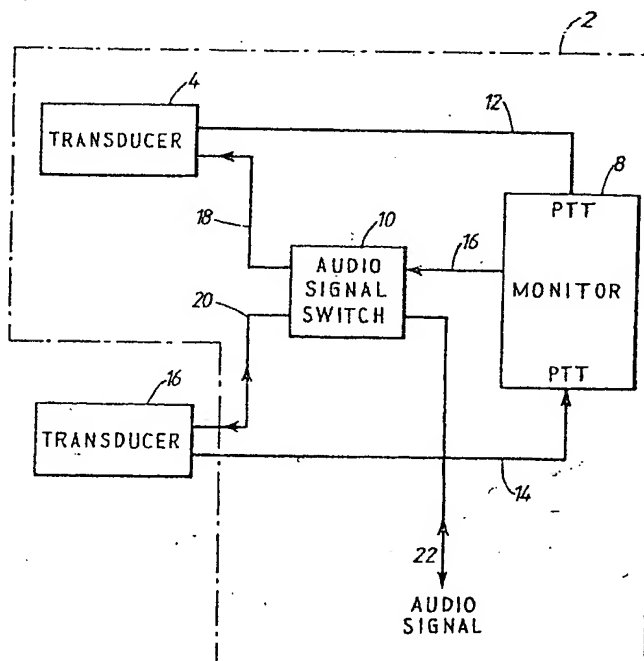
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(54) Improvements in or relating to  
communication apparatus

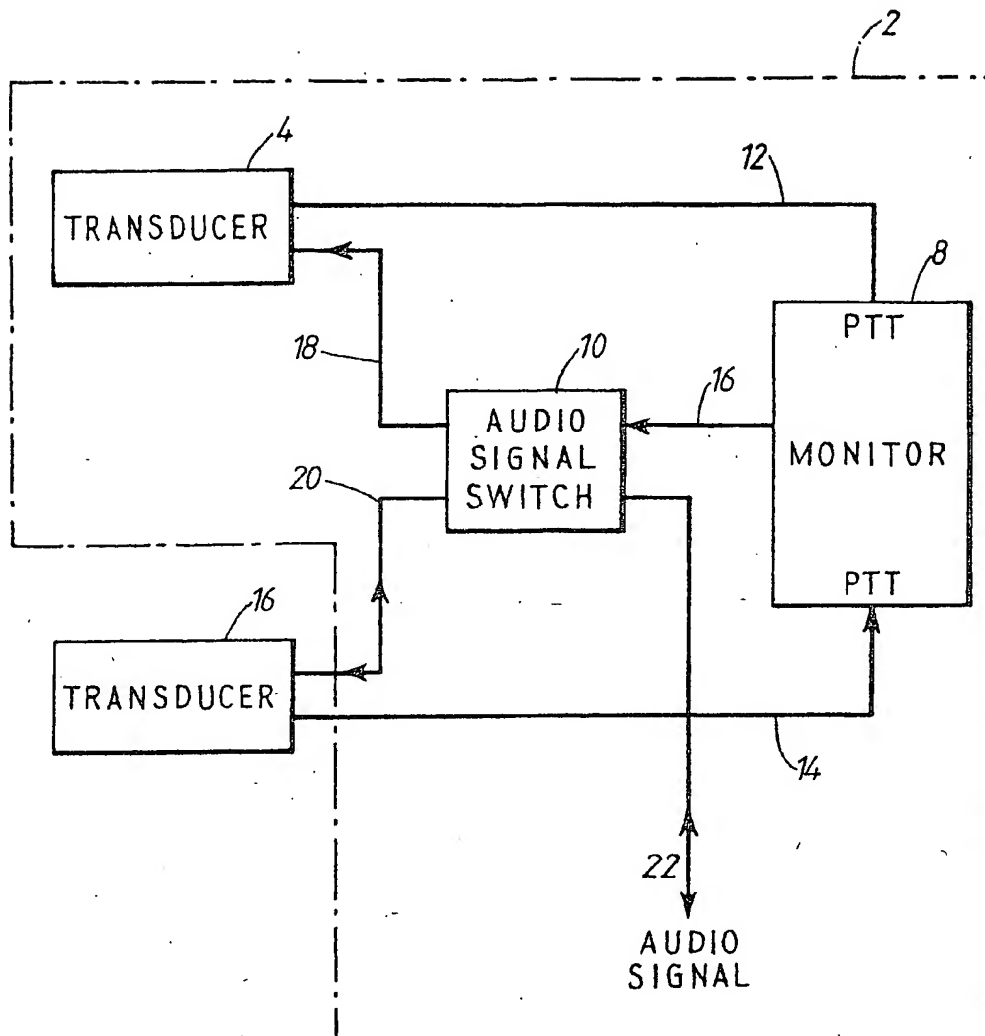
(57) Communications apparatus, such as a transmitter receiver, for use with two transducers 4 and 6, (such as loudspeakers, microphones or headphones) includes a monitor 8 for detecting when a press to talk switch on either transducer 4 or 6 is operated. An audio signal switch 10 is provided, which is responsive to the monitor 8, for coupling an audio signal line 22 to the selected transducer 4 or 6.



The drawing(s) originally filed was (were) informal and the print here reproduced is taken from a later filed formal copy.

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## SPECIFICATION

### Improvement in or relating to communication apparatus

The present invention relates to improvement in or relating to communication apparatus.

In communication apparatus, such as a transceiver, the audio signal link between the transceiver and the operator may be made by means of a loudspeaker and microphone transducer combination. Normally the loudspeaker forms an integral part of the transceiver and the microphone may be either integral with or external to the transceiver. Alternatively the audio signal link may be made by means of a microphone and headphone transducer combination external to the transceiver.

In such transceivers it is desirable to have automatic routing of the audio signals to the selected transducer, and preferably it is desirable if this can be achieved without any modification to the transducers.

In known transceivers the routing of the audio signals to an external transducer is normally achieved by modifying the transducer by the inclusion of an additional feature which can be detected by the transceiver, such as an additional pin in the transducer connecting plug shorted to ground or manual switches set by an operator.

Alternatively the external transducer may be detected by the transceiver by including impedance detection circuitry within the transceiver which detects the impedance change when, for example, a microphone headphone transducer combination is selected in lieu of an internal loudspeaker microphone transducer combination.

However, the detection circuitry is complex and furthermore, may not operate with all types of transducers.

It is an object of the present invention to provide communication apparatus which senses a necessary related operator action to initiate switching between either a microphone and loudspeaker integral to the apparatus or a microphone and headphones external to the apparatus. This can be achieved by sensing the press-to-talk switch on either transducer combination.

Accordingly, there is provided communications apparatus arranged to have at least two transducers connected thereto and comprising monitoring means for detecting the identity of a transducer selected by an operator and switching means, responsive to the monitoring means, arranged to provide a signal path between the communications apparatus and the selected transducer.

The present invention will now be described, by way of example, with reference to the accompanying drawing which illustrates a schematic diagram of communication apparatus in accordance with the present invention.

Referring to the drawing, a transceiver 2 is provided with an internal loudspeaker and microphone combination for use by an operator, shown as transducer 4. An external headphone and micro-

phone combination, shown as transducer 6, is connected to the receiver 2 so that the operator may choose between either the internal transducer 4 or the external transducer 6, depending upon operational requirements. The transducers 4 and 6 are connected to monitoring means such as a monitor 8 and also to switch means shown as an audio signal switch 10. The audio signal switch 10 is used to control the feed of audio signals passing between the transducers 4 and 6 and other sections of the transceiver (not shown) and is itself controlled by the monitor 8.

The transducers 4 and 6 are each provided with a press-to-talk (PTT) switch which can be closed by an operator when it is desired to provide an audio input to the transceivers. For the internal transducer 4 the PTT switch may be located conveniently on the casing of the transceiver and for the external transducer 6 the PTT switch may be located in the electrical lead connecting the transducer 6 to the receiver 2.

In operation an operator selects whether it is desired to use internal transducer 4 or external transducer 6 and to transmit information the PTT switch on the selected transducer is operated. The monitor 8 continuously monitors the PTT switches of the transducers 4 and 6 along the lines 12 and 14 respectively. When the PTT switch of either transducer 4 or 6 is closed by the operator an electrical link between the apparatus and the selected transducer is completed and this is detected by the monitor 8. On detecting an electrical link to either transducer 4 or 6, the monitor 8 feeds a signal to the audio signal switch 10 along a line 16. The audio signal switch 10 responds to the signal from the monitor 8 and connects the selected transducer to the transceiver along line 18 or 20 and line 22, thereby providing an audio signal path between the selected transducer and the transceiver. For example, if the operator selects the external transducer 6, the PTT switch on this transducer would be operated so that an audio input could be made to the transceiver 2. The operation of the PTT switch of transducer 6 is detected by the monitor 8 and a signal is fed to the audio signal switch 10 indicating that the PTT switch of transducer 6 has been operated. The audio signal switch 10 then connects the line 20 to the line 22 to provide an audio signal path from transducer 6 to the transceiver 2. The transmitter section of the transceiver may then be activated.

The monitor 8 and the audio signal switch 10 may take the form of a micro controller.

Preferably, at the end of any PTT period, the audio signal path is maintained to the selected transducer such that any received audio signals are routed to the last selected transducer.

The audio signal path to either transducer may be maintained until the PTT switch of the other transducer is operated.

Although the transceiver has been described in relation to one internal and one external transducer other transducer configurations may be employed. For example, transducers 4 and 5 may both be external to the transceiver or the micro-

phone of the internal transducer 4 may be external to the transceiver.

Furthermore, the transceiver may be used to select between more than two transducers.

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#### CLAIMS

1. Communications apparatus arranged to have at least two transducers connected thereto and comprising monitoring means for detecting the identity of a transducer selected by an operator and switching means, responsive to the monitoring means, arranged to provide a signal path between the communications apparatus and the selected transducer.

2. Communications apparatus according to claim 1 wherein the monitoring means and the switching means comprise a microcontroller.

3. Communications apparatus according to claim 1 or claim 2 wherein a press to talk switch is provided for each transducer and the monitoring means detects the identity of the selected transducer by detecting when the press to talk switch of a transducer is made by an operator.

4. Communications apparatus according to claim 3 wherein the switching means is arranged such that, after a press to talk switch of a transducer is made by an operator, the signal path to that transducer is maintained until the press to talk switch of another transducer is made by an operator whereby signals processed by the communications apparatus are routed automatically to the last selected transducer.

5. Communications apparatus according to any one of the preceding claims wherein the transducers comprise microphones, loudspeakers or headphones, or any combination thereof.

6. Communications apparatus according to any one of the preceding claims comprising a transmitter receiver.

7. Communications apparatus according to any one of the preceding claims wherein the transducers are integral to the apparatus.

8. Communications apparatus substantially as hereinbefore described with reference to the accompanying drawing.